

REMARKS/ARGUMENTS

Claims 16-44 are pending in the application. Claim 38 is amended herein to correct an inadvertent typographical error. The Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and these remarks.

In paragraph 2 of the final office action, the Examiner rejected claims 16-20 under 35 U.S.C. 103(a) as being unpatentable over Mahany. In paragraph 3, the Examiner rejected claims 21-22, 27-33, 38-40, and 43 under 35 U.S.C. 103(a) as being unpatentable over Mahany in view of Das. In paragraph 4, the Examiner objected to claims 23-26, 34-37, 41-42, and 44 as being dependent upon a rejected base claim, but indicated that those claims would be allowable if rewritten in independent form. For the following reasons, the Applicant submits that all of the now-pending claims are allowable over the cited references.

Claims 16 and 27

Claim 16 is directed to an automated method for communicating packets of data with predetermined packet sizes over a communication channel from a transmitter to a receiver. According to this automated method, initial interference in the communication channel is characterized, a first maximum frame transmission time is selected based on the characterized initial interference, and a first data rate and a first frame size are selected for a first packet based on the first maximum frame transmission time. The first packet is fragmented into one or more frames based on the first frame size, and the one or more frames of the first packet are transmitted at the first data rate, such that transmission duration of each frame of the first packet is less than the first maximum frame transmission time.

Furthermore, subsequent interference in the communication channel is characterized, a second maximum frame transmission time is selected based on the characterized subsequent interference, wherein the second maximum frame transmission time is different from the first maximum frame transmission time, and a second data rate and a second frame size are selected for a second packet based on the second maximum frame transmission time. The second packet is fragmented into one or more frames based on the second frame size, and the one or more frames of the second packet are transmitted at the second data rate, such that transmission duration of each frame of the second packet is less than the second maximum frame transmission time.

According to claim 16, "the second maximum frame transmission time is different from the first maximum frame transmission time," where each packet is fragmented into one or more frames for transmission. The term "frame" of claim 16 is analogous to the term "fragment" in Mahany.

Mahany teaches two data rates: a standard rate and a high rate, which is four times greater than the standard rate. See column 22, lines 40-43. According to Mahany, "Fragment lengths are selected such that high and low rate maximum fragment lengths are the same duration. In other words, a fragment at the low rate conveys approximately 1/4 the payload of a fragment for the case where the data rate is four times greater." See column 22, lines 61-65 (emphasis added).

Thus, in Mahany, the fragment transmission duration at the normal rate is the same as the fragment transmission duration at the high rate. As such, Mahany does not teach or even suggest the feature explicitly recited in claim 16 that "the second maximum frame transmission time is different from the first maximum frame transmission time."

Moreover, the Examiner's reasoning contradicts the explicit teachings in Mahany. In rejecting claim 16, the Examiner stated on page 3: "Mahany discloses that the network switches between two or more data rates depending on channel conditions for different packets." The Examiner also stated on page 3: "Since channel conditions are changing, it is necessary to characterize subsequent interference in the communication channel in order to transmit the second packet. The second maximum frame transmission time will also be different from the first maximum frame transmission time since channel conditions will have changed, and the maximum frame transmission times depend on channel conditions." On page 4, the Examiner stated: "the second data rate will be different from the first data rate and the second frame size will be different from the first frame size if channel conditions change. Since the data rate and frame size depend on levels of interference, if the level of interference changes between consecutive packets, the data rate and frame size between the consecutive packets will necessarily change" (emphasis added).

The essence of the Examiner's argument is that, if channel conditions change, then a network will necessarily change (1) its data rate, (2) its frame size, and (3) its maximum frame transmission time. This contradicts Mahany, which explicitly teaches a network that changes its data rate and its frame size, but not its maximum frame transmission time.

For all these reasons, the Applicant submits that claim 16 is allowable over Mahany. For similar reasons, the Applicant submits that claim 27 is allowable over Mahany. Since claims 17-26 and 28-37 depend variously from claims 16 and 27, it is further submitted that those claims are also allowable over Mahany.

Claims 18 and 29

According to claims 17 and 28, at least one of (i) the second data rate is different from the first data rate and (ii) the second frame size is different from the first frame size. According to claims 18 and 29, which depend from claims 17 and 28, respectively, the second data rate is the same as the first data rate. Thus, in claims 18 and 29, the first and second frame sizes are different, while the corresponding first and second data rates are the same.

Mahany teaches, in column 22, lines 40-65, a standard (i.e., low) data rate of 250 Kbps and a high data rate of 1 Mbit/sec, where "a fragment at the low rate conveys approximately 1/4 the payload of a fragment for the case where the data rate is four times greater." Thus, in Mahany, each different data rate corresponds to a different fragment size. Mahany does not teach or even suggest a situation where two frame sizes are different, while the two corresponding data rates are the same.

In rejecting claim 18, the Examiner stated on page 4: "the second data rate will be the same as the first data rate if channel conditions remain the same." That may be true, but that is not what claim 18 is about. In claim 18, the maximum frame transmission time and the frame size change, while the data rate remains the same. This is not a situation where "channel conditions remain the same." The Examiner's argument regarding claim 18 appears to ignore the explicit recitations of claim 17 from which claim 18 depends.

The Applicant submits that this provides additional reasons for the allowability of claims 18 and 29 over the cited references.

Claims 19 and 30

According to claims 17 and 28, at least one of (i) the second data rate is different from the first data rate and (ii) the second frame size is different from the first frame size. According to claims 19 and 30, which depend from claims 17 and 28, respectively, the second frame size is the same as the first frame size. Thus, in claims 19 and 30, the first and second data rates are different, while the first and second frame sizes are the same.

As described in the previous section, Mahany does not teach or even suggest a situation where two data rates are different, while the two corresponding frame sizes are the same.

In rejecting claim 19, the Examiner stated on page 5: "the second frame size will be the same as the first frame size if channel conditions remain the same." As with claim 18, that may be true, but that is not what claim 19 is about. In claim 19, the maximum frame transmission time and the data rate change, while the frame size remains the same. This is not a situation where "channel conditions remain the same." As with claim 18, the Examiner's argument regarding claim 19 appears to ignore the explicit recitations of claim 17 from which claim 19 depends.

The Applicant submits that this provides additional reasons for the allowability of claims 19 and 30 over the cited references.

Claims 21 and 32

According to claims 21 and 32, the first data rate and the first frame size are selected from a first table of two or more combinations of data rates and frame sizes corresponding to the first maximum frame transmission time, and the second data rate and the second frame size are selected from a second table of two or more combinations of data rates and frame sizes corresponding to the second maximum frame transmission time, wherein the first table is different from the second table.

In rejecting claims 21 and 32, the Examiner admitted, on page 5, that Mahany does not disclose these features. The Examiner cited Das as providing the teachings missing from Mahany. In doing so, the Examiner mischaracterized the teachings in Das.

In particular, the Examiner stated on page 6 that Das discloses (1) a first table of two or more combinations of data rates and frame sizes, citing any of columns 2-5 of Table 1 of Das, and (2) a second table of two or more combinations of data rates and frame sizes, citing another of columns 2-5 of Table 1 of Das. As the Examiner admits on page 6, the different columns of Table 1 of Das do not correspond to different maximum frame transmission times. Rather, the different columns of Table 1 of Das correspond to different packet sizes.

Nevertheless, the Examiner stated that, in Das, "each data rate is chosen based on the data rate indicated in the data rate messages," as if that somehow overcomes the differences between Das and the invention of claims 21 and 32. The Examiner stated further, on page 7, that the invention of claims 21 and 32 would have been obvious, because "One would be motivated to do this in order to determine the appropriate data rate and frame size combination to transmit data based on changing channel conditions." Again, it may be true that someone would be motivated to change the combination of data rate and frame size based on changing channel conditions, but that is not the same thing as what is recited in claims 21 and 32. The Examiner states what Das teaches and then concludes that the invention of claims 21 and 32 would be obvious without providing any relevant reasons. Just because Das teaches different columns corresponding to different frame sizes, that does not obviate claims 21 and 32, which teaches different

tables corresponding to different maximum frame transmission times, where frame sizes and maximum frame transmission times are two different things.

The Applicant submits that this provides additional reasons for the allowability of claims 21 and 32 (and therefore claims 22-23 and 33-34) over the cited references.

Claims 22 and 33

According to claims 22 and 33, the first table corresponds to the characterized initial interference, and the second table corresponds to the characterized subsequent interference.

In rejecting claims 22 and 33, the Examiner admitted that Mahany does not disclose these features. Instead, the Examiner stated on page 7: "However, since the first/second data rate and the first/second frame size is chosen based on the first/second table, which is chosen based on the first/second maximum frame transmission time," the invention of claims 22 and 33 would be obvious.

Significantly, the Examiner does not identify what prior-art reference teaches "the first/second data rate and the first/second frame size is chosen based on the first/second table, which is chosen based on the first/second maximum frame transmission time." It's not in Mahany and it's not in Das. Neither of them teach different tables corresponding to different maximum frame transmission times. It's only in claims 21 and 32, from which claims 22 and 33 depend. Surely, it would be improper for the Examiner to argue that claims 22 and 33 are obvious over claims 21 and 32.

The Applicant submits that this provides additional reasons for the allowability of claims 22 and 33 over the cited references.

Claim 38

Claim 38 is directed to a transmitter for communicating packets of data with predetermined packet sizes over a communication channel to a receiver. The transmitter comprises a memory and a processor. The memory is adapted to store a plurality of different tables, each table comprising two or more combinations of data rates and frame sizes and each table corresponding to a different maximum frame transmission time. The processor adapted to (a) characterize interference in the communication channel, (b) select a first table of the plurality of tables based on the characterized interference; (c) select, from the first table, a first combination of a first data rate and a first frame size for a first packet; and (d) fragment the first packet into one or more frames based on the first frame size, wherein the transmitter is adapted to transmit the one or more frames of the first packet at the first data rate, such that transmission duration of each frame of the first packet is less than the maximum frame transmission time corresponding to the first table.

For the same reasons given previously for claims 21 and 32, the Applicant submits that claim 38 is allowable over the cited references. Since claims 39-44 depend variously from claim 38, it is further submitted that those claims are also allowable over the cited references.

Claim 39

According to claim 39, the first table further comprises a second combination of a second data rate and a second frame size, where the first data rate is different from the second data rate, and the first frame size is the same as the second frame size.

For the same reasons given previously for claims 18 and 29, the Applicant submits that this provide additional reasons for the allowability of claim 39 over the cited references.

Claim 43

According to claim 43, the processor is further adapted to (e) re-characterize the interference in the communication channel; (f) select a second table of the plurality of tables based on the re-characterized interference; (g) select, from the second table, a second combination of a second data rate and a second frame size for a second packet; and (h) fragment the second packet into one or more frames based on the second frame size, wherein the transmitter is adapted to transmit the one or more frames of the second packet at the second data rate, such that the transmission duration of each frame of the second packet is less than the maximum frame transmission time corresponding to the second table; and the maximum transmission time corresponding to the second table is different from the maximum transmission time corresponding to the first table.

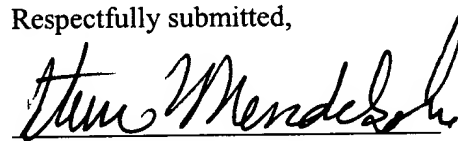
For the same reasons given previously for claims 16 and 27, the Applicant submits that this provide additional reasons for the allowability of claim 43 over the cited references.

In view of the foregoing, the Applicant submits that the rejections of claims under Section 103(a) have been overcome.

In view of the above amendments and remarks, the Applicant believes that the pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

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